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| 10/728,552 | 12/04/2003 | David Johnston | 1020.P17478 | 8773 |

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KACVINSKY LLC
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

| EXAMINER |
|---|
| JUNTIMA, NITTAYA |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| | Application No. | Applicant(s) |
| --- | --- | --- |
| **Office Action Summary** | 10/728,552 | JOHNSTON, DAVID |
| | Examiner | Art Unit | |
| | NITTAYA JUNTIMA | 2416 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *12 November 2008*.

2a)☐ This action is **FINAL**.      2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6,8-12,14,15,17 and 19* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8-12, 14-15, 17, and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All    b)☐ Some *    c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)          Office Action Summary          Part of Paper No./Mail Date 20090116

## DETAILED ACTION

1.      This action is in response to the RCE filed on 121/12/2008.

2.      **Claims 1-6, 8-12, 14-15, 17, and 19** are pending (claims 7, 13, 16, and 18 were

canceled).

### *Claim Rejections - 35 USC § 112*

3.      The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

**Claims 3-6, and 17** are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

**Claims 3-6 and 17** include the limitations of a table driven hardware parser which

correspond to Fig. 4 and paragraphs 0038-0039 of the specification.  However, their respective

independent claims 1 and 15 as currently amended are directed to a microcode sequenced

hardware parser which correspond to Fig. 5 and paragraphs 0041-0043.  Therefore it cannot be

determined why and how the elements of a table driven hardware parser be included and used

in a microcode sequenced hardware parser as Figs. 4 and 5 are shown to be **two mutually**

**exclusive embodiments**.

### *Claim Rejections - 35 USC § 102*

4.      The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.      **Claims 1-2, 8-9, 15, and 19** are rejected under 35 U.S.C. 102(e) as being anticipated by

Sarkinen (US 6,904,057 B2).


Regarding **claim 1**, as shown in Fig. 3, Sarkinen teaches an apparatus, comprising:

A configuration module (element 320) store configuration information including

instructions (parsing instructions 322) to reconfigure one or more hardware elements (parsing

engine 330 includes a search/lookup engine, col. 11, lines 4-5, therefore, hardware elements

within 440 in Fig. 4 including a search/lookup engine must be reconfigured in order to provide

multi-stage parsing of the incoming frame 314 based on parser instructions 322).

A hardware-based parsing module (elements 310 and 330 constitute a hardware-based

parsing module) to connect to said configuration module, said parsing module comprising a

microcode sequencer (a microcode controlled programmable sequencer, col. 11, lines 14-16),

said parsing module to receive a frame of information (incoming frame 314) and determine a

frame format associated with said frame (the preliminary multi-protocol frame classification

312), retrieve configuration information corresponding to said frame format (parsing instructions

322), and reconfigure a set of hardware elements to parse said frame based on the retrieved

configuration information (the parsing engine 330 provide multi-stage parsing of the incoming

frame 314 based on parsing instructions 322, col. 10, lines 37-48, and a set of hardware elements

reads on a search/lookup engine of the parsing engine 330, col. 11, lines 4-5 and hardware

elements within 440 in Fig. 4) and microcode information (microcode instruction set) from said

microcode sequencer (col. 11, lines 14-23, 36-59).

Regarding **claim 2**, Sarkinen teaches that said parsing module (elements 310 and

330,Fig.3 constitute a parsing module) outputs a field type for said frame (search results

322,Fig.3 represent information about the incoming frame 314, e.g, identification of the fields in

the packet/the frame classification, col. 10, lines 49-50, 59-62 and col. 12, lines 61-64).

Regarding **claim 8**, Sarkinen further teaches that said configuration module (element

320,Fig.3) comprises microcode memory (memory 430, Fig.4) to store mask data (bit mask, col.

11, lines 14-23, 44-59, col. 12, lines 36-38, 48-53), compare data (instructions for relative

compare/fixed compare, col. 12, lines 36-38, 48-53), branch addresses (branch instructions, col.

12, lines 36-38, 48-60) and field types (field's predetermined conditions, col. 12, lines 48-60 and

col. 13, lines 59-64).

Regarding **claim 9**, Sarkinen also teaches a delay line module (the dual port memory

buffer 416 in Fig. 4) to buffer said frame during said frame parsing (col. 12, lines 24-26, 36-42,

64-col. 13, lines 1-3).

Regarding **claim 15**, Sarkinen teaches a method (Fig. 3) to perform frame parsing,

comprising:

Receiving a frame of information (receiving incoming frame 314, col. 10, lines 39-42).

Determining a frame format associated with said frame (the preliminary multi-protocol frame classification 312 for frame 314 is produced, col. 10, lines 39-42).

Retrieving configuration information (parsing instructions 322, Fig.3) from a configuration module (a parsing instructions generator 320, Fig.3) corresponding to said frame format (col. 10, lines 42-45, see also step 712 in Fig. 7), the configuration information using instructions to reconfigure one or more hardware elements (the parsing engine 330 is programmable to build search words according to the microcode instructions, col. 10, lines 37-62, col. 11, lines 4-23, col. 12, lines 5-12, 24-col. 13, lines 14, and Fig. 7, therefore, hardware elements within 410 and 440 in Fig. 4 must be reconfigured in order to provide multi-stage parsing of the incoming frame 314 based on parser instruction set 436).

Reconfiguring a parsing module, comprising a microcode sequencer (a microcode controlled programmable sequencer, col. 11, lines 14-16), to parse said frame of information using said configuration information (parsing instructions 322 are used to control a multi-stage parsing engine 330 for processing frame 314, col. 10, lines 42-48, 59-62, col. 11, lines 14-23) and microcode information (microcode instruction set) from said microcode sequencer (col. 11, lines 14-23, 36-59).

Parsing said frame for frame format information using said reconfigured parsing module (a multi-stage parsing engine 330 parses frame 314 using parsing instructions 322, col. 10, lines 45-48, 59-62).

Regarding **claim 19**, as shown in Fig. 4, Sarkinen further teaches delaying said frame

until said frame format information is parsed (the frame is read out and forwarded with the

search results 472 when the processing is complete, col. 13, lines 1-3).

### *Claim Rejections - 35 USC § 103*

5.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains.  Patentability shall not be negatived by the
> manner in which the invention was made.

6.      **Claims 10 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over an art

of record, Korpela (EP 0 852 448 A1) in view of Sarkinen (US 6,904,057 B2).

Regarding **claim 10**, Korpela teaches a system (Fig. 1), comprising:

At least one base station (radio access networks 20a, 20b, 20c, Fig. 1) to communication

frames of information using a plurality of different frame formats (col. 4, lines 12-16, col. 8,

lines 50-56)

A mobile station (mobile terminal 10, Fig. 1) to receive said frames of information, said

mobile station comprising a receiver (RF circuit 12, digital signal processor device 13, and

control device 15 constitute a receiver) to receive and process said frames (col. 4, lines 25-40,

col. 8, lines 50-56).

However, Korpela does not teach that said receiver comprises reconfigurable hardware-based frame parser comprising a configuration module and a parsing module as claimed.

In an analogous art of multi-frame-format processing, Sarkinen teaches a network device 100 in Fig. 1 (equivalent to a receiver) that includes Frame/Medium Access Control 112 and a differentiated services routing and policing engine 120 in Fig. 1, collectively, for providing *multi-protocol*, multi-stage, real-time frame classification and generating search results using a preliminary multi-protocol frame classification and parsing instructions generated for incoming frames (col. 9, lines 58-67-col. 10, lines 3) comprising a classifier 300 in Fig. 3 (equivalent to a reconfigurable hardware-based frame parser) that comprises:

A configuration module (element 320) to store configuration information including instructions (parsing instructions 322) to reconfigure one or more hardware elements (parsing engine 330 includes a search/lookup engine, col. 11, lines 4-5, therefore, hardware elements within 440 in Fig. 4 including a search/lookup engine must be reconfigured in order to provide multi-stage parsing of the incoming frame 314 based on parser instructions 322).

A parsing module (elements 310 and 330 constitute a parsing module) to connect to said configuration module, said parsing module comprising a microcode sequencer (a microcode controlled programmable sequencer, col. 11, lines 14-16), said parsing module to receive a frame of information (incoming frame 314) and determine a frame format associated with said frame (the preliminary multi-protocol frame classification 312), retrieve configuration information corresponding to said frame format (parsing instructions 322), and reconfigure a set of hardware elements to parse said frame based on the retrieved configuration information (the parsing engine

330 provide multi-stage parsing of the incoming frame 314 based on parsing instructions 322, col. 10, lines 37-48, and a set of hardware elements reads on a search/lookup engine of the parsing engine 330, col. 11, lines 4-5 and hardware elements within 440 in Fig. 4) and microcode information (microcode instruction set) from said microcode sequencer (col. 11, lines 14-23, 36-59).

Given the teaching of Sarkinen, it would have been obvious to one skilled in the art at the time the invention was made to modify the Korpela such that said receiver would comprise reconfigurable hardware-based frame parser comprising a configuration module and a parsing module as claimed. The suggestion/motivation to do so would have been to provide a parser that is programmable to build search words based on the preliminary multi-protocol frame classification and parsing instructions as suggested by Sarkinen (col. 10, lines 39-48 and col. 11, lines 15-16).

Regarding **claim 14**, Korpela does not teach a delay line module for buffering said frame during said frame parsing.

However, Sarkinen teaches a dual port memory buffer 416 in Fig. 4 for buffering a frame during frame parsing (equivalent to a delay line module). See col. 12, lines 24-26, 36-42, 64-col. 13, lines 1-3.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the teaching of Korpela to include a delay line module as claimed. The suggestion/motivation to do so would have been to have the frame written into the buffer and

read out from after frame processing is complete as taught by Sarkinen (col. 12, lines 64-col. 13,

lines 3 and Fig. 4).


7.       **Claims 11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over an art

of record, Korpela (EP 0 852 448 A1) in view of Sarkinen (US 6,904,057 B2), and further in

view of Johnson (US 7,184,722 B1).

Regarding **claim 11**, although Korpela teaches the inherent MAC unit (the media access

controller) for processing MAC layer (col. 6, lines 6-12), the combined teaching of Korpela and

Sarkinen does not explicitly teach that the receiver comprises a power amplifier, an RF/IF

converter to connect to said power amplifier, an IQ module to connect to said RF/RF converter, a

baseband processor to connect to said IQ module and the media access controller.

However, Johnson teaches a wireless transmitter such as a mobile unit 18 in Fig. 2 for

communicating to a plurality of base stations that includes a receiver (radio 60 working in a

receiving direction as shown in Figs. 5A and 5B) comprising a power amplifier (amplifier

75,Fig.5A in the reception portion), an RF/IF converter (RF/IF converter 72,Fig.5A in the

reception portion), an IQ module (I/Q modem 68,Fig. 5B in the reception portion), and a

baseband processor (baseband processor PHY 66,Fig.5B in the reception portion) connecting to a

MAC (MAC 64,Fig. 5B).  See col. 8, lines 7-18, 41-col. 9, lines 1-42.

Therefore, it would have been obvious to one skilled in the art at the time the invention

was made to further modify the combined teaching of Korpela and Sarkinen such that the power

amplifier, RF/IF converter, IQ module, and baseband processor would be connected to the

receiver and media access controller as claimed. The suggestion/motivation to do so would have been to enable the received wireless signal carrying data to be processed correctly.

Regarding **claim 12**, Korpela does not teach that the inherent MAC (see rejection of claim 10) comprises a reconfigurable hardware-based frame parser.

However, in an analogous art, Sarkinen teaches a Frame/Medium Access Control 112 and a differentiated services routing and policing engine 120 in Fig. 1, collectively, that comprises a classifier 300 in Fig. 3 which is a reconfigurable hardware-based frame parser as it provides *multi-protocol*, multi-stage, real-time frame classification and generates search results using a preliminary multi-protocol frame classification and parsing instructions generated for incoming frames (equivalent to a media access controller comprises a reconfigurable hard-ware-based frame parser). See col. 9, lines 58-60, 67-col. 10, lines 3, 27-48.

Given the teaching of Sarkinen, it would have been obvious to one skilled in the art at the time the invention was made to modify the combined teaching of Korpela and Johnson to further include a reconfigurable hardware-based frame parser as claimed. The suggestion/motivation to do so would have been to provide a parser that is programmable to build search words based on the preliminary multi-protocol frame classification and parsing instructions as suggested by Sarkinen (col. 10, lines 39-48 and col. 11, lines 15-16).

### *Response to Arguments*

8.      Applicant's arguments filed 11/12/2008 have been fully considered but they are not persuasive.

A.      In the remarks on pages 6 and 7 regarding claims 1, 10, and 15, Applicant argues that

Sarkinen does not teach the parsing module to configure a set of hardware elements to parse a

frame based on microcode information from the microcode sequencer because Sarkinen does not

disclose that hardware elements are configured to parse a frame.

In response, the Examiner respectfully disagrees.  It is clear in Figs. 3 and 4 of

Sarkinen that a set of hardware elements must be configured to parse a frame because:

- **the parsing engine 330** in Fig. 3 (corresponding to the parsing engine 440 in Fig. 4)

includes **a search/lookup engine** (col. 11, lines 4-5);

- the parsing engine 330 as shown in Fig. 3/440 in Fig. 4 is part of *an*

*apparatus* (col. 9, lines 23-25 and col. 10, lines 37-48 and col. 12, lines 5-7, 48-51), **parses the**

**incoming frame** (col. 10, lines 59-62), is programmable to build search words and **driven by a**

**microcode controlled programmable sequencer implementation** (col. 11, lines 14-23, 36-59),

and **executes a new instruction each clock cycle** (col. 13, lines 11-14);

-    the process as shown in Fig. 7 implemented as computer program 262

may be loaded into **the classifier 210 in Fig. 2, which contains elements 310 and 330 of Fig. 3,**

**to configure** the classifier 210 to perform the steps in Fig 7 as taught by Sarkinen (col. 14, lines

9-19).

Since there is no difference in structure or function between the teaching of Sarkinen and

the claimed limitations, i.e., the parsing engine 330 of Sarkinen **containing a set of hardware**

**elements, i.e., a search/lookup engine, is controlled** by the microcode instruction set generated

by the microcode sequencer, **to parse a received frame** according to its type, the parsing engine

330 is equivalent to the claimed parsing module configuring a set of hardware elements to parse

a frame based on microcode information from the microcode sequencer, it is submitted that all

claimed limitations are met.  Accordingly, the rejection is sustained.

## *Conclusion*

9.      Any inquiry concerning this communication or earlier communications from the

examiner should be directed to NITTAYA JUNTIMA whose telephone number is 571.272.3120.

The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Seema Rao can be reached on 571.272.3174.  The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system.  Status information for published applications

may be obtained from either Private PAIR or Public PAIR.  Status information for unpublished

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system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nittaya  Juntima/
Examiner, Art Unit 2416
1/21/2009